CLOUD CHASING

A CLOSER LOOK AT THE E-CIGARETTE EPIDEMIC

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Cloud Chasing

A Closer Look at the E-Cigarette Epidemic

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Copies of this publication are available online at www.phd5.idaho.gov/vaping

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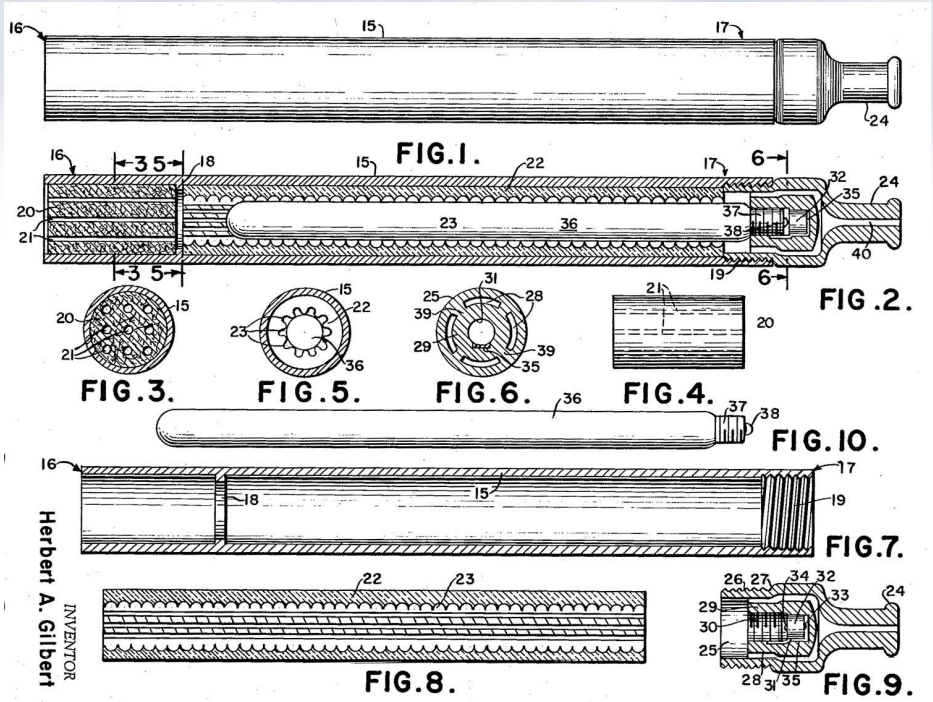


U.S. Pat. No.3,200,819 (Gilbert, 1963)

An early approximation of the current e-cigarette appeared in a U.S. Patent application submitted in 1963 by Herbert A Gilbert and was patented in August 1965. The application was for a "smokeless nontobacco cigarette," with the aim of providing "a safe and harmless method of smoking" by replacing tobacco and paper with heated, moist, flavored air. A battery-powered heating element would heat the flavor elements without combustion (USDHHS, 2016).

The first modern e-cigarette was developed in 2003 by the Chinese pharmacist, Hon Lik, a former deputy director of the institute of Chinese Medicine in Liaoning Province. Lik's patent application described a kind of electronic atomizing cigarette (USDHHS, 2016).

With support from Chinese investors, in 2004 the product was introduced on the Chinese market under the company name Ruyan. The product gained some attention among Chinese smokers early on as a potential cessation device or an alternative cigarette product. The e-cigarette was part of the U.S. Market by the mid-2000s and by 2010 additional brands started to appear in the nation's marketplace, including Ruyan and Janty (USDHHS, 2016)

In August 2013, Imperial Tobacco Group purchased the intellectual property behind the Ruyan e-cigarette for $75 Million. As of 2014 an estimated 90% of the world's production of e-cigarette technology and products came from mainland China. Sales of e-cigarettes in the United States have risen rapidly since 2007(USDHHS, 2016).

CHARACTERISTICS OF E-CIGARETTES

(Penn State, 2013)

Electronic cigarettes are a diverse group of products that produce a heated aerosol, typically containing nicotine, which users inhale via a mouthpiece. E-cigarettes range widely in design, appearance, and complexity, but generally contain similar components and operate in a similar manner. Common components of e-cigarettes include a battery, a heating coil, an atomizer that transforms the e-liquid to an aerosol, a cartridge that contains the e-liquid, and a mouthpiece (NASEM, 2018).

The basic operation of e-cigarettes generally follows several steps. First, the user draws upon the e-cigarette mouthpiece. Then, a user either manually presses a switch button to activate a heating element, or draws upon the e-cigarette and an airflow sensor automatically activates it. In automatically activated devices, the airflow sensor detects pressure changes and prompts the flow of power to a heating element and an LED (optional). The e-liquid contained in the device saturates a wick, which the heating element then aerosolizes. This process is commonly called “vaporization.” Aerosolized droplets of liquid subsequently flow into the user’s mouth and are inhaled into the lungs (NASEM, 2018) .

TOBACCO OWNED COMPANIES

All the major tobacco companies and many smaller, independent companies are now in the e-cigarette business. When e-cigarettes first entered the U.S. market, they were sold primarily by independent companies via the Internet and in shopping malls at kiosks where those interested could sample the products (USDHHS, 2016).

Company	E-cigarette brand
Altria (NuMark)	MarkTen, Green Smoke, JUUL (33% in 2018)
Phillip Morris International	Heat-not-burn, IQOS brand (Vape Ranks 2014) E-cig, Nicolites by Nicocigs (Philip Morris International 2014),Blu
British American Tobacco	Vype, Vuse Vibe, Vuse Alto
R.J. Reynolds Tobacco Company (Reynolds Vapor Company)	VUSE
Lorillard Tobacco Company (Lorillard Vapor Company)	Blu (until 2015 when Phillip Morris purchased them)
Swisher	E-swisher
Japan Tobacco (JTI)	E-lites offered in united kingdom by Zandera Ltd., which was aquired by Japan Tobacco Inc. In 2014. Ploom and PAX (used for vaporizing marijuana)

(USDHHS, 2016)

(British American Tobacco, 2019)

(Phillip Morris International, 2019)

CLASSIFICATIONS OF E-CIGARETTES

First Generation Devices

- E-cigarettes were often similar in size and shape to conventional cigarettes, with a design that also simulated a traditional cigarette in terms of the colors used. These devices were often called "cigalikes". There were also other products designed to simulate a cigar or a pipe. Other "cigalikes" were slightly longer or narrower than a cigarette; they came in various colors ranging from white and tan to black and bright colors. These models used a cartridge design for the part of the device that holds the e-liquid, which is either prefilled with the liquid or empty and ready to be filled (USDHHs, 2016).

- Only three chemicals were listed in these devices (propylene glycol, nicotine, water).
- These devices contained only 5-20 mg/ml of nicotine.
- Designed to mimic the smoking experience as close as possible, these products served as stand-ins for cigarettes among users who wished to quit smoking or sought out an alternative product to a cigarette (NASEM, 2018).
- These devices are why we refer to vaping products as e-cigarettes. The newer devices do not look anything like a cigarette and are now referred to as vapors.

CLASSIFICATIONS OF E-CIGARETTES

Second Generation Devices

- Second generation e-cigarettes are characterized by a clearomizer, a transparent cartridge that holds e-liquid and an atomizer, and a thin battery. Second generation devices include products that are shaped like pens, are comparatively larger and cylindrical, and are often referred to as “tank systems”, in reference to the transparent reservoir that holds larger amounts of e-liquid than previous cartridge-containing models (NASEM, 2018).
- This is when flavors and other chemicals were added to e-cigarette liquids.
- These devices are also popular with marijuana (THC) chemicals, because of the universal 510 thread battery. Consumers can purchase a prefilled tank with THC to replace one that is empty. Often called “Dank Vapes”.

CLASSIFICATIONS OF E-CIGARETTES

Third Generation Devices

- Third generation devices represent a diverse set of products and constitute the greatest departure from the traditional cigarette shape. Many are square or rectangular and feature customizable and rebuildable atomizers and batteries (USDHHS, 2016).
- Users can modify the devices or build their own devices, which are often referred to as "MODS", this is short for modifying (USDHHS, 2016).
- The differences in design and engineering of these products are key factors in the size, distribution, amount of aerosol particles, and the variability in levels of chemicals present in the e-liquid/aerosols delivered to the user (USDHHS, 2016).
- These devices are advertised as "vaping" products and the associated marketing makes no reference to cigarettes (NASEM, 2018).
- These devices are capable of creating huge amounts of vape clouds, also known as **CLOUD CHASING.**

CLASSIFICATIONS OF E-CIGARETTES

Fourth Generation Devices

- Fourth generation devices are small and easy to hide. They are often called “PODS”.
- When “pods” first arrived on the market, the majority of them were closed system vape kits that were pre-filled with disposable cartridges that didn't allow a person to introduce different e-juice.
- Now there are open system pods with refillable cartridges, and devices that have refillable tanks built into their frames.
- These devices are often made to look like everyday common products found around the house, at the office, or in school, for example: hard drives, flash drives, watches, lipstick, drawstrings, coffee mugs, pens, and MP3 players.
- These devices are so popular that other companies have started copying the design created by JUUL.

Juul and Similar Products

(Campaign for Tobacco Free Kids, 2018)

Dependence

Nicotine is the principal pharmacological agent that causes dependence. Nicotine is delivered via the pulmonary route. The speed, efficacy, and magnitude of nicotine delivered produces a higher addiction (USDHHA, 2016). Becoming dependent on nicotine can lead to addiction, and will also lead to withdrawal symptoms if the addict tries to quit.

Withdrawal symptoms include:

- Stress
- Anxiety
- Anger
- Mood Swings
- Lack of concentration
- Grades dropping
- Lack of motivation

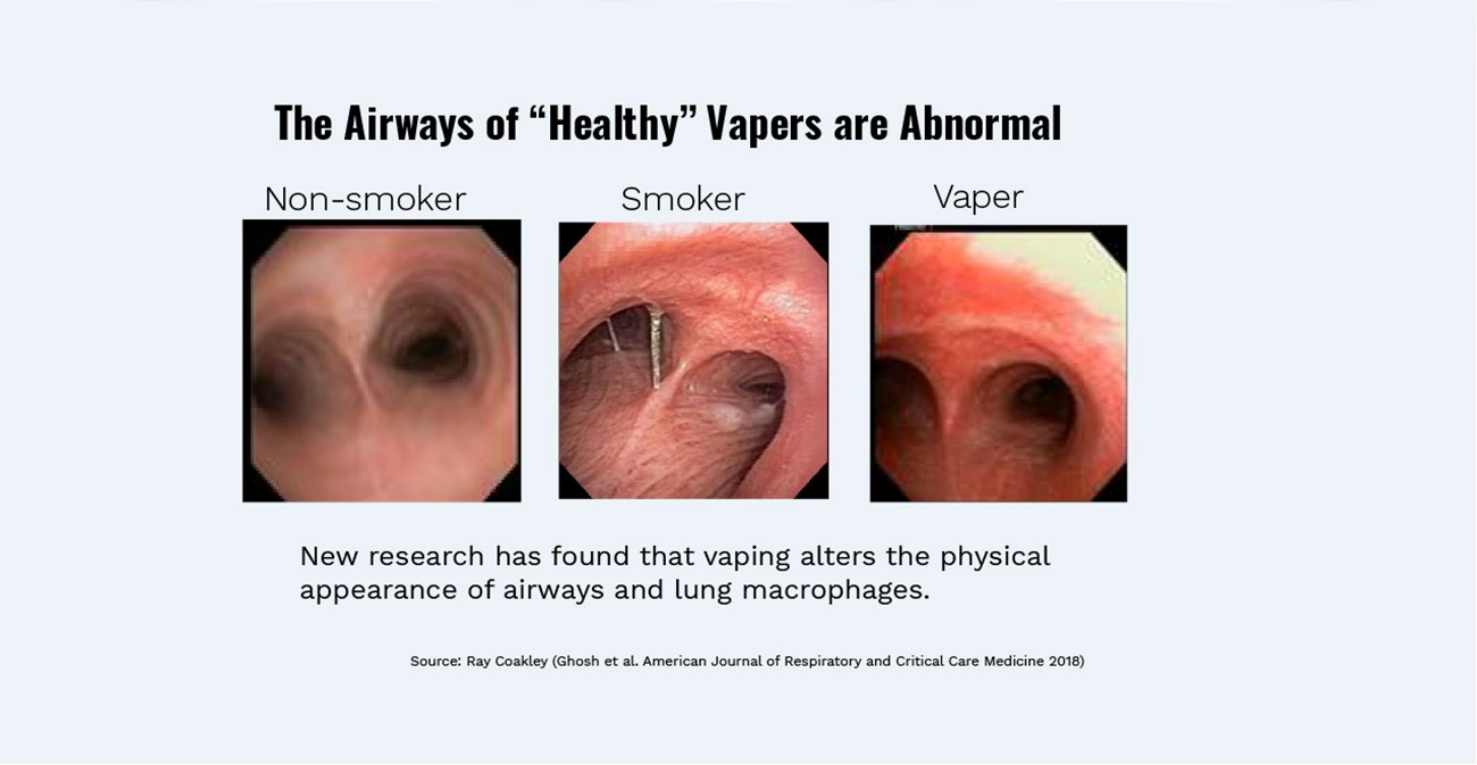
Coping skills:

- Exercise
- Play a game
- Watch a movie
- Write in a journal
- Hang out with friends
- Create a project
- Finish a project
- Work on homework
- Listen to music

www.mylifemyquit.com was developed with youth who provided insight into how best to reach teens looking for support to stop using tobacco products, including electronic cigarettes like JUUL. My Life, My Quit coaches are specially trained to listen and understand teens, provide personalized support, and build relationships that support quitting tobacco.

POTENTIAL DANGERS

Cardiopulmonary Impact

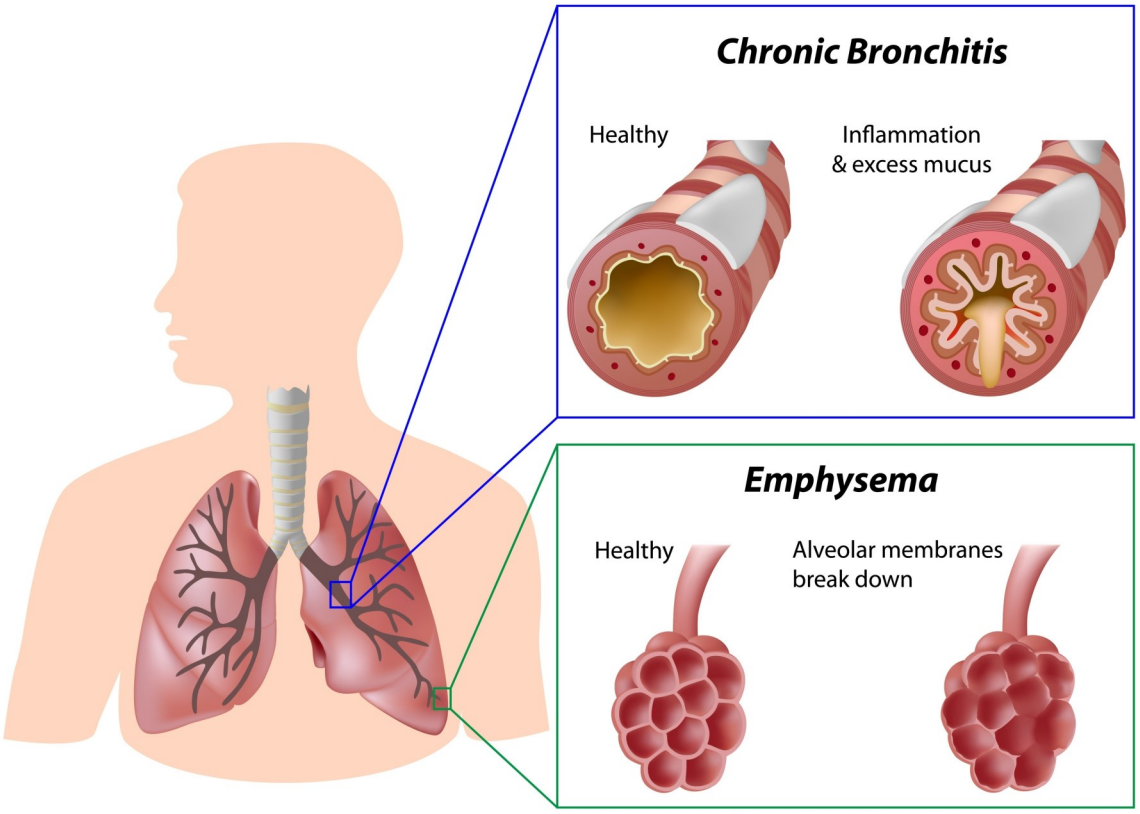


(Ghosh et al., 2018)

Notice in the picture above, the non–smoker airways are straight up and down, and you can see the macrophages are circular patterned. The smoker's airways are tilted and no longer straight up and down. They are narrowed, show signs of irritation, and contain phlegm. Notice the macrophages are now curved and no longer making a circular pattern. When we look at the vaping airways, we see extreme irritation, changes in the airways, and no signs of macrophages. Macrophages destroy bacteria, viruses, and fungi. They are an essential part of the body's immune system.

"We have concerns about the direct effects of e-cigarettes on the airways. This includes the potential for the use of such products to cause changes to airways that could be a precursor to cancer" (FDA Report On Seizures, 2019).

Cardiopulmonary Impact



Often promoted as a healthier alternative to smoking, vaping increases the chances of developing chronic pulmonary diseases like emphysema, asthma and bronchitis by 30%. People who smoke both conventional and electronic cigarettes more than triple their risk of having respiratory illnesses

(Bhatta & Glantz, 2019).

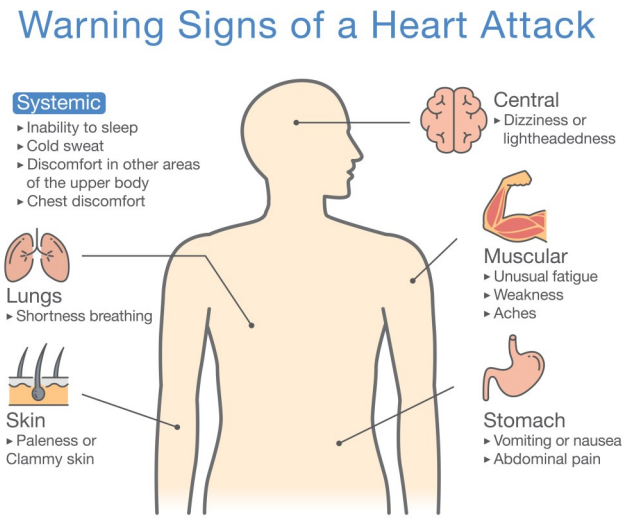
POTENTIAL DANGERS

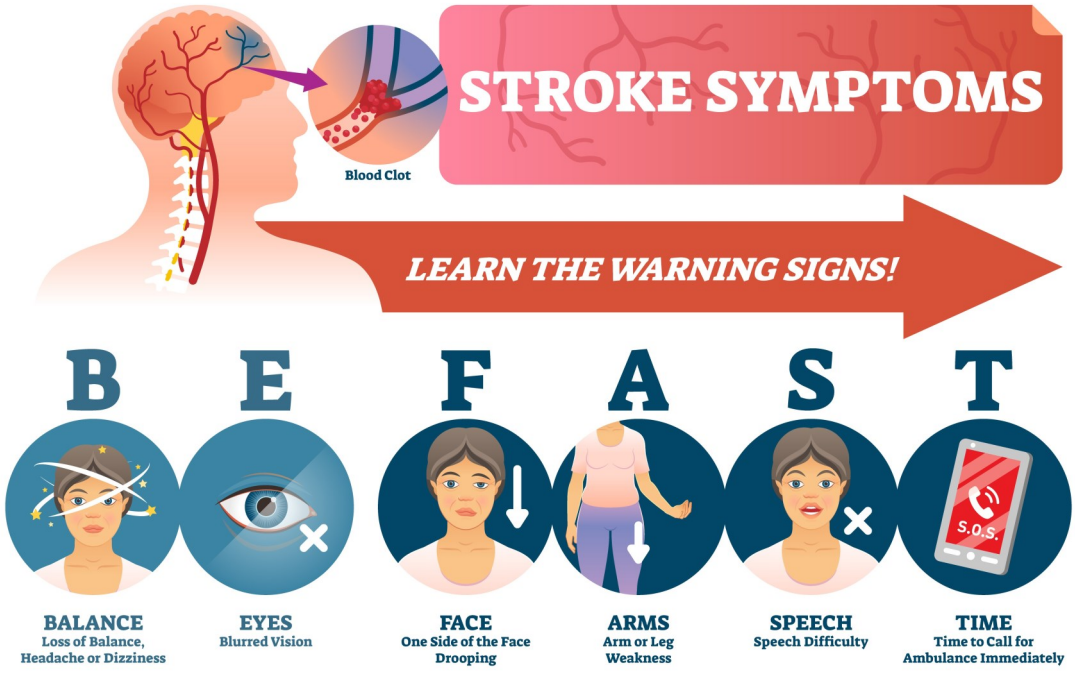
Cardiopulmonary Impact

Compared with non-users, e-cigarette users are:

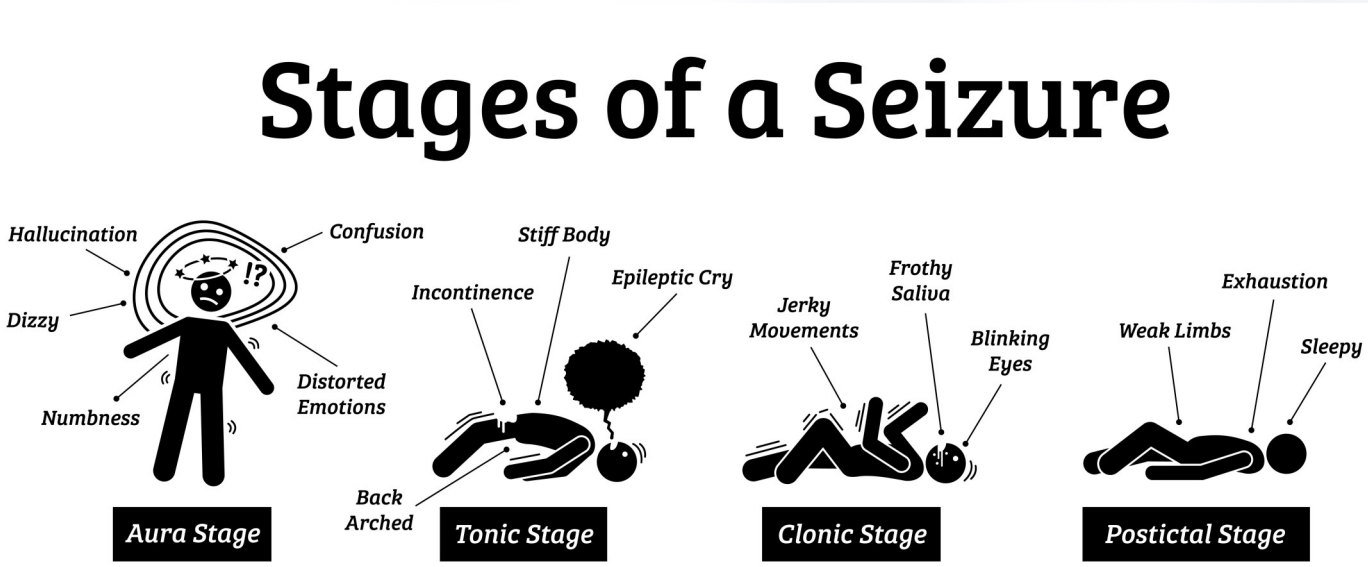
- 34 percent more likely to have a heart attack.
- 25 percent more likely to have coronary artery disease.
- 55 percent more likely to suffer from depression or anxiety.
- 30 percent more likely to suffer a stroke, high blood pressure, and circulatory problems.

(ACC, 2019)





Seizures



The FDA has seen a recent uptick in voluntary reports that mentioned seizures occurring with e-cigarette use (e.g., vaping) signaling a potential emerging safety issue. E-cigarette users are experiencing seizures, with most reports involving youth or young adult users. Seizures or convulsions are a known potential side effects of nicotine toxicity and have been reported in the scientific literature in relation to intentional or accidental swallowing of e-liquid (FDA Report On Seizures, 2019).

If you think a person is having a seizure, call 911 and seek immediate medical help. For exposures with less serious visible effects, or if you have questions, call poison control at 800-222-1222.

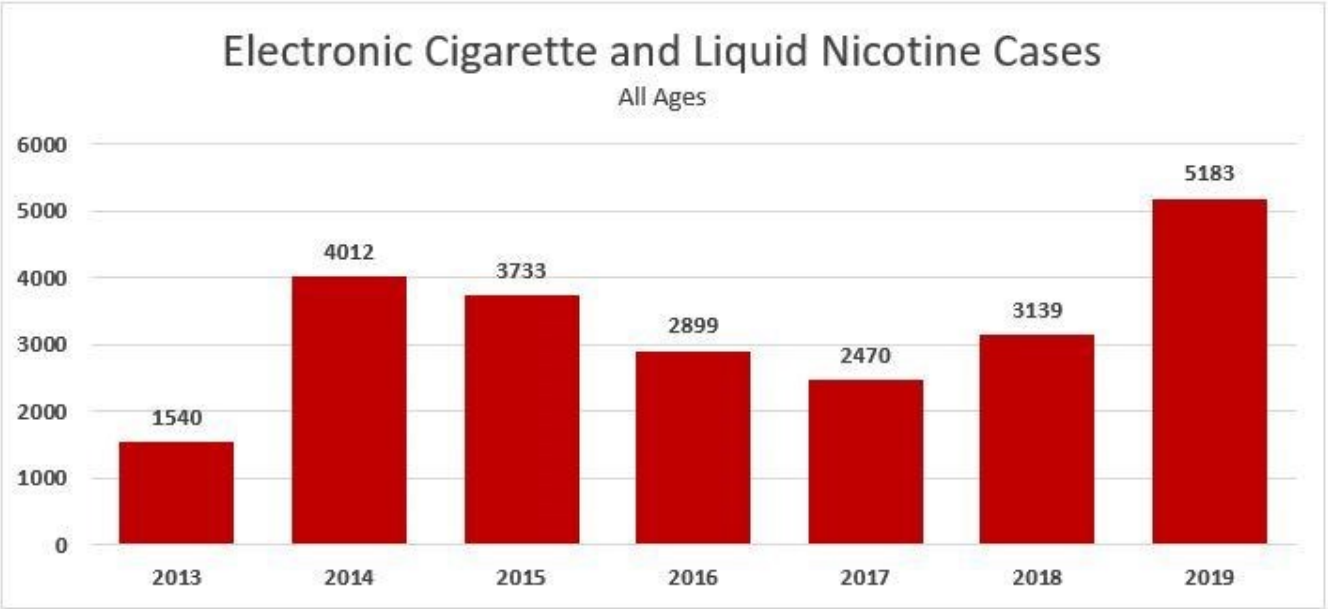
POTENTIAL DANGERS

Vaping leads to Smoking Traditional Cigarettes

When compared to adolescents who do not use e-cigarettes, adolescents who use e-cigarettes are 4x more likely to start smoking tobacco cigarettes within 18 months of starting e-cigarettes (Primack, 2018).

Teens have a 30 percent chance of smoking a regular cigarette within 6 months of trying their first e-cigarette (NIDA, 2016).

Poison Control



(AAPCC, 2017) As of December 31, 2019

Poison control centers began receiving calls about e-cigarettes and liquid nicotine products in 2011, which coincides with the initial period when these products reached the U.S. market. These products often contain a greater concentration of nicotine than other nicotine/tobacco products on the market. Some children and toddlers who come in contact with e-cigarette devices or liquid nicotine have become very ill, often resulting in emergency department visits. Nausea and vomiting are the most significant symptoms (AAPCC, 2017).

"Exposures to vaping liquids and other products containing nicotine can cause nausea, vomiting, and dizziness. In serious cases, exposure can lead to life-threatening and severe symptoms like seizures, decreased heart rate, and decreased blood pressure. These symptoms can happen to anyone of any age, but the risk is greatest in children due to their size" (AAPCC, 2017).

POTENTIAL DANGERS

Outbreak of Lung Injury

As of June 2019, the Center for Disease Control and Prevention (CDC), the U.S. Food and Drug Administration (FDA), state and local health departments, and other clinical and public health partners are investigating a multi-state outbreak of lung injury associated with the use of e-cigarette, or vaping products.

- All E-cigarette, or Vaping, product use Associated Lung Injury (EVALI) patients have reported a history of using e-cigarette, or vaping, products.
    - THC is present in most of the samples tested by FDA and most patients report a history of using THC-containing products.
    - The latest national and state findings suggest products containing THC, particularly those obtained off the street or from other informal sources (e.g. friends, family members, illicit dealers), are linked to most of the EVALI patients and play a major role in the outbreak.
    - A small percentage of findings report using only nicotine products.

Symptoms of Lung Injury Reported by Patients in This Outbreak

Patients in this investigation have reported symptoms such as:

- cough, shortness of breath, chest pain
- nausea, vomiting, abdominal pain, diarrhea
- fever, chills, weight loss

Some patients have reported that their symptoms developed over a few days, while others have reported that their symptoms developed over several weeks. A lung infection does not appear to be causing the symptoms.

Anyone interested in learning more about this investigation can visit www.cdc.gov/tobacco/basic_information/e-cigarettes/severe-lung-disease.html

(CDC's Office on Smoking and Tobacco Use, 2019)

Irrespective of the ongoing Investigation

- E-cigarette, or vaping, products should never be used by youths, young adults, or women who are pregnant.
- Adults who do not currently use tobacco products should not start using e-cigarette, or vaping, products.
- THC use has been associated with a wide range of health effects, particularly with prolonged heavy use. The best way to avoid potentially harmful effects is to not use THC, including through e-cigarette, or vaping, products. Persons with marijuana use disorder should seek evidence-based treatment by a health care provider.
- There is no safe tobacco product. All tobacco products, including e-cigarettes, carry a risk

(CDC's Office on Smoking and Tobacco Use, 2019)

Bacterial exposure study

Harvard School of Public Health Researchers examined 75 popular e-cigarette products.

- 37 single-use cartridges
- 38 e-liquids from 10 top-selling U.S. brands
- The products were classified into four different flavor categories.
    - Tobacco, menthol, fruit, and other
    - Screened for the presence of endotoxin and glucan (toxic inflammatory substances that damage the lungs).

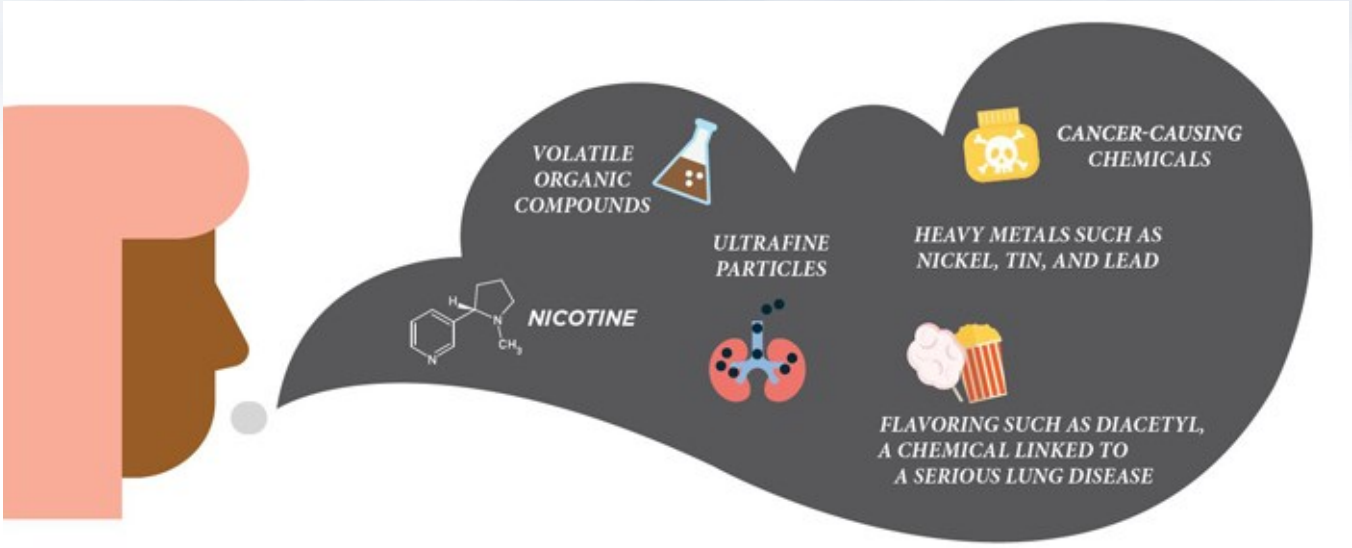
Researchers found

- 2 percent of the products contained traces of endotoxin, a potential inflammatory molecule found in bacteria.
- 81 percent of the products contained traces of glucan, a toxic substance found in the cell walls of most fungi.

Exposure to these microbial toxins has been associated with a myriad of health problems, including asthma, reduced lung function, and inflammation.

(Lee Mi-Sun, Allen Joseph G., & Christiani David C., 2019)

SECOND HAND VAPING



(CDC's Office on Smoking and Health, 2019)

The e-cigarette aerosol that users inhale and exhale can contain harmful and potentially harmful substances, including:

- Nicotine
- Ultrafine particles that can be inhaled deep into the lungs
- Flavoring such as diacetyl, a chemical linked to a serious lung disease
- Volatile organic compounds (formaldehyde)
- Cancer-causing chemicals
- Heavy metals such as nickel, tin, and lead

It is difficult for consumers to know what e-cigarette products contain. For example, some e-cigarettes marketed as containing zero percent nicotine have been found to contain nicotine.

(CDC's Office on Smoking and Tobacco Use, 2019)

Glycerol (a.k.a. Vegetable Glycerin)

Uses:

- Food additive
- Artificial sweetener
- Used to make hand lotions

Side Effects:

- Creates **Acrolein** (when heated) - has been known to cause lung damage and heart disease. Also used in weed killer.
- Allergies-made from coconut and palm oil.
- Can cause swelling in the throat, making it difficult to breathe.

Propylene Glycol

Uses:

- Ingredient in antifreeze.
- Has a sweet taste. That's why cats and dogs lick antifreeze on the ground and potentially die from it.
- Used to absorb certain medicines, cosmetics, or food products (ATSDR, 1997).

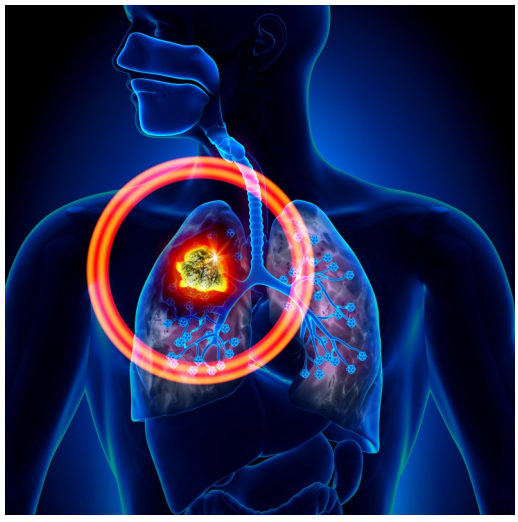
Side Effects:

- Toxic to liver and kidneys.
- Not safe for pregnant women and infants.
- If people and animals have repeated eye, skin, nasal, or oral exposure to propylene glycol for a short time, they may develop some irritation (ATSDR, 1997).

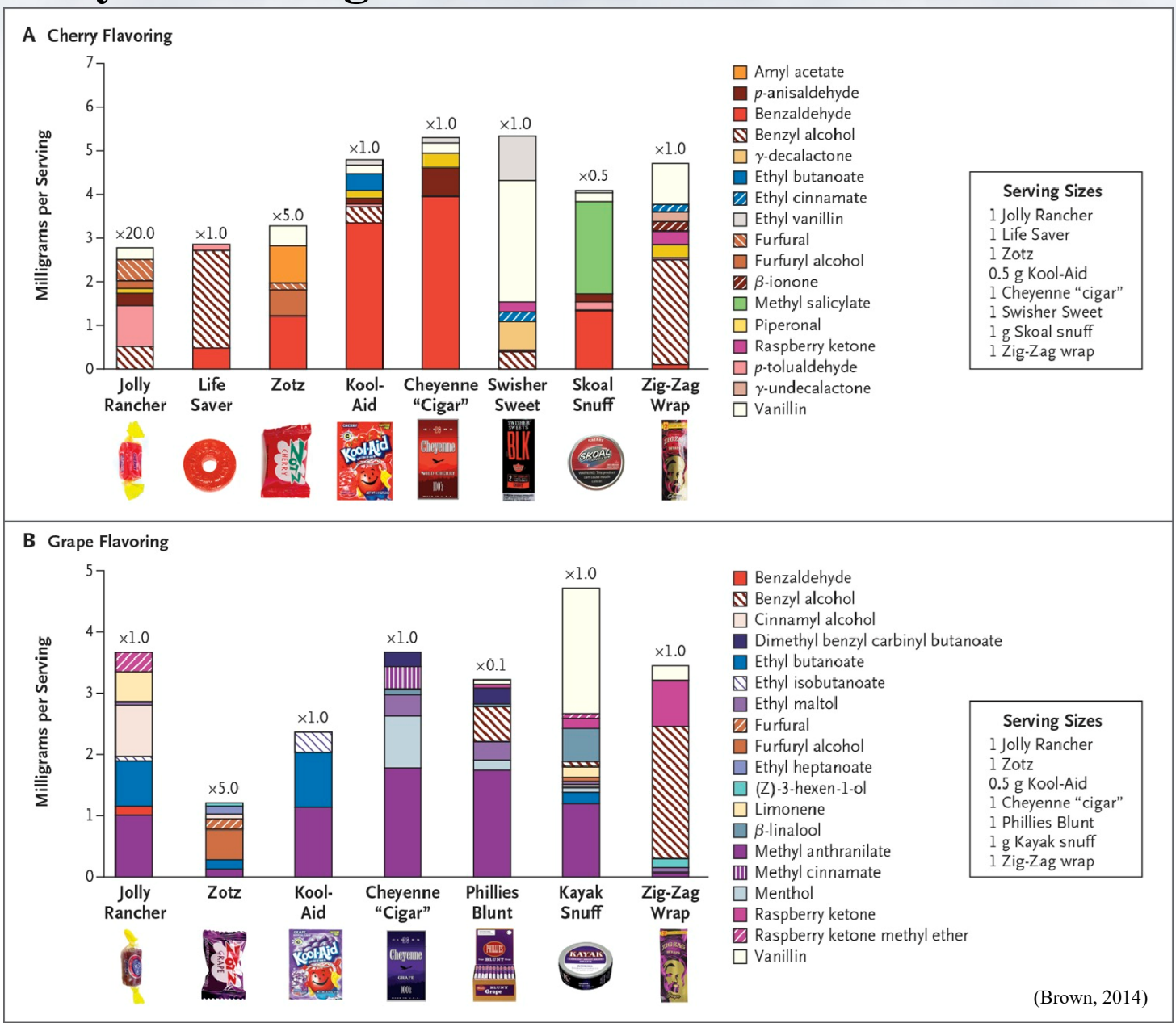
Formaldehyde (cancer causing)

Formaldehyde is a known degradation product of **propylene glycol that reacts with glycerol during vaporization** to produce hemiacetals (Jensen 2015).

Formaldehyde–releasing agents may deposit more efficiently in the respiratory tract than gaseous formaldehyde. As such they could carry a higher slope factor for cancer (Jensen 2015).



Candy Flavorings in Tobacco



(Brown, 2014)

"Within each flavor type, there is great overlap in the flavor chemicals used. Some tobacco products contained flavor chemicals at much higher levels per serving than non-tobacco products. The same familiar, chemical-specific flavorings that are associated with fruit flavors in popular candy and drink products are being used in the engineering designs of flavored tobacco products" (Brown, 2014).

Flavor Chemicals

The e-liquids in e-cigarettes are most often flavored; a study estimated that 15,000 unique flavors exist and that most of them are fruit or candy flavors. Flavors have been used for decades to attract youth to tobacco products and to mask the flavor and harshness of tobacco. Notably, 81.5 percent of current youth e-cigarette users said they used e-cigarettes "because they come in flavors I like" (USDHHS, 2016).

There is concern that the availability of e-cigarettes with sweet flavors will facilitate nicotine addiction and simulated smoking behavior, which will lead to the use of conventional tobacco products. The safety of inhaling e-cigarette flavorings is in question. Some manufactures have claimed their flavorants are generally recognized as safe for food additives (used in preparing foods to *eat*); little is known about the long-term health effects of *inhaling* these substances into the lungs (USDHHS, 2016).

Diacetyl (Popcorn Lung)

A recent study analyzed 159 e-liquids obtained from a variety of manufacturers and retailers in Europe and the United States for the presence of diacetyl. The study detected diacetyl in 39 of 51 flavors tested. Diacetyl provides a characteristic buttery flavor, is naturally found in various foods, and is used as a synthetic flavoring agent in food products such as butter, caramel, cocoa, coffee, dairy products, and alcoholic beverages. Although it is generally recognized as safe when *ingested* in the stomach, it has been associated with a decline in respiratory function in persons exposed to it through inhalation. Inhaling diacetyl aerosols can cause lung disease in those exposed. In addition, it has been implicated in the development of bronchiolitis obliterans, an irreversible respiratory disease also called "popcorn lung disease" (USDHHS, 2016).

CHEMICALS

Nicotine

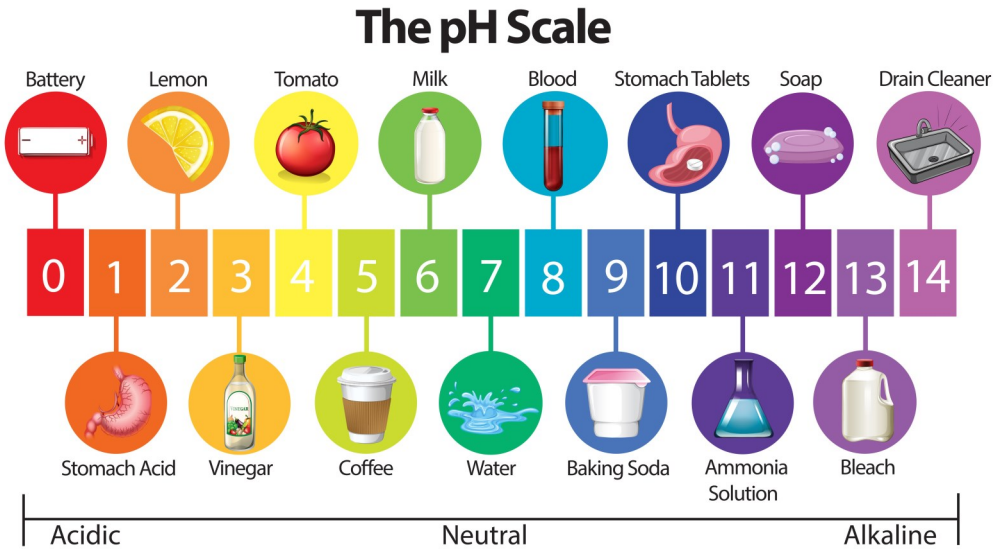
Nicotine is the primary psychoactive substance in conventional cigarettes. Responses to nicotine in adolescents differ from those seen in adults. The developing adolescent brain is immature and vulnerable, so it is important to understand how nicotine affects adolescent brain development. Substantial evidence suggests that nicotine can negatively influence both adolescent and prenatal brain development. Normal brain structure and functional development continues into young adulthood until age 25. Because of the immaturity and rapid growth of the prefrontal cortex, adolescents and young adults normally exhibit moody, risk-taking, and unpredictable impulsive behaviors. This makes them more likely to experiment with vaping and other drugs (USDHHS, 2016).

Freebase Nicotine

This is nicotine at its purest form. It's the same nicotine that is used in cigarettes, chewing tobacco and the first e-cigarettes. When inhaling freebase nicotine, it can give a strong burning or gag reflex in the throat or lungs, most commonly called "Throat Burn". The more nicotine inhaled per puff, the stronger the throat burn. This is why many smokers lose their voice throughout their lives.

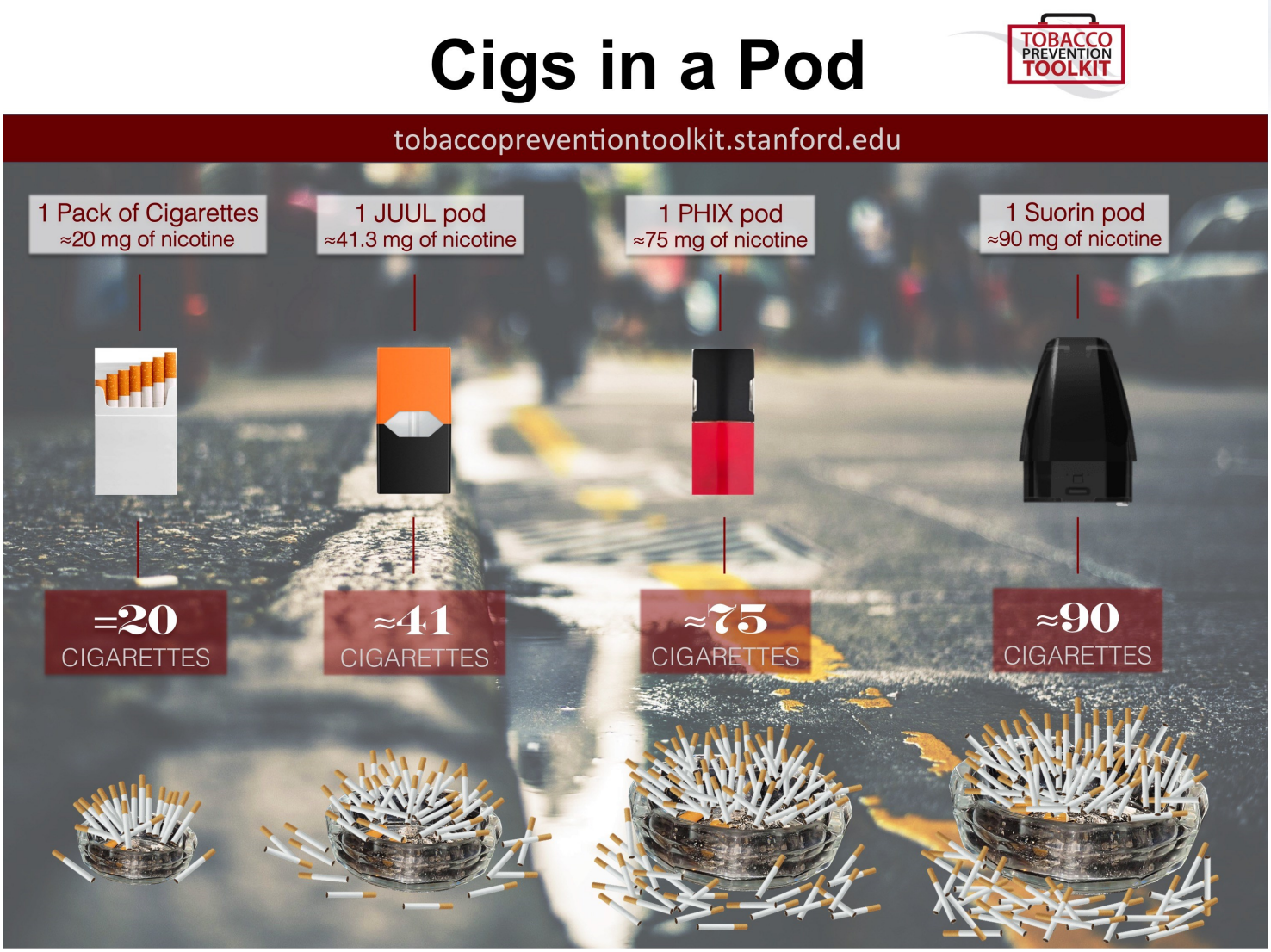
Nicotine Salts (Nicotine Benzoate)

Freebase nicotine has a high pH level (8.5 - 11). This makes freebase nicotine taste bad and burn your throat. Some companies like JUUL, have been adding benzoic acid (pH level 4) to increase Nicotine levels. If a company adds an acid to the chemical formula of nicotine it lowers the pH level to give a smoother throat hit, which makes vaping 50mg bearable.



The vaping devices seem safer than they are, due to e-liquid companies removing the throat burn effect.

Nicotine in Vaping Devices



Nesbitt's Paradox

Nicotine is unique in comparison to most drugs, as its profile changes from stimulant to sedative/pain killer in increasing dosage. This phenomenon is described by Paul Nesbitt in his doctoral dissertation and also known as the Nesbitt's Paradox.

- At low doses, nicotine potently enhances the actions of norepinephrine (alertness) and dopamine (pleasure) in the brain, causing a drug effect typical of psychostimulants.
- At high doses, nicotine enhances the effect of serotonin and opiate activity, producing a calming, pain killing effect.

(Nesbitt, 1969)

VAPING OTHER DRUGS

The Dark Side of Vaping

E- cigarettes have grown in popularity and claim to be a safer alternative to traditional cigarettes. However, for some, e-cigarettes have become an easy, almost undetectable way to abuse a wide range of synthetic drugs. People are vaping dangerous substances: alcohol, hash oil, caffeine, psychedelics, LSD, marijuana (THC), heroin, and opioids (fentanyl). They are doing this discreetly in vape pens, sometimes right in front of police, parents, and teachers. Some of these e-liquids are easily purchased online, making the user believe these products are a "safe high". This couldn't be further from the truth. Inhaling an unknown mix of unregulated synthetic chemicals is incredibly dangerous and can have a deadly effect (Education Specialty Publishing, LLC, 2016).

DEFINITIONS

A

Acrolein –Created by heating up glycerin. Has been known to cause heart problems and lung issues. Use in weed killer.

Advanced Personal Vaporizer (APV) – APVs usually have a larger battery, often with features such as variable voltage and wattage. An APV is more commonly called a MOD (modified e-cig)

Airflow (or Adjustable Airflow) – This often comes as an adjustable feature on tanks and atomizers which allows the user to control the draw resistance when using their vaping device.

B

BCC – Abbreviation standing for "bottom coil clearomizer", where the coil of the atomizer sits at the bottom of the clearomizer tank.

BDC – Abbreviation for "bottom dual coil clearomizer."

Box Mod – A box MOD is any PV or APV that comes in a box shape, and comes in several different wattage selections. Some popular wattage classes for box MODs are: 10-30 watts, 50-80 watts, 100+ watts.

BVC – Abbreviation for bottom vertical coils, a very popular design for atomizer coils.

C

Cartomizer (Carto) – This is a combination of disposable cartridges and atomizers. It holds more e- liquid than a regular cartridge/atomizer combination.

Cig-A-Like – Is vaping hardware that has a similar appearance to a cigarette.

Clapton Coil – This coil is made with a large gauge wire wrapped tightly by a smaller gauge wire, like a guitar string, hence its name.

Clearomizer – A clearomizer is a transparent version of a cartomizer. Usually made of thin and easily breakable plastic, clearomizers hold roughly 2-3ml of e -liquid.

Coil – This is the wire that is used to vaporize the e -liquid by creating an electrical circuit. The coil is usually made up of Nichrome or Kanthal wire.

D

Dank Vape - Marijuana vaping devices that utilize 510 thread batteries and usually have high percentages of THC.

Deck – This is the flat base area, where the positive and negative posts sit on an RBA/RDA, which is designed to keep e-liquid off the battery connection.

Diacetyl – Diacetyl is a flavoring used in some e-liquid production for its buttery flavor (also used in some popcorn products). Diacetyl can cause bronchiolitis obliterans (otherwise known as Popcorn Lung) if inhaled in large concentrations.

Draw – This is the name given to the inhale from the vaper's mouth on the electronic cigarette mouthpiece (knows as a drip tip, see below).

Dripping – This is the method of vaping which consists of adding a few drops of e liquid directly into the atomizer chamber instead of using a cartridge. This is the method that gives the best vapor quantity and flavor quality.

Drip Tip – A mouthpiece accessory with an opening that allows drops of e-liquid to be dripped directly to the atomizer/cartomizer without the removal of the tip.

E

eGo/eGo Style – A style of electronic cigarette that utilizes the 510 threads and allows one to use 510 components, but with a much larger battery.

E-Juice – The solution that is vaporized within the atomizer tank, comprised of vegetable glycerin, propylene glycol, and/or nicotine and flavoring. Also referred to as e-liquid, juice, or smoke juice.

E-Liquid – Another popular name for e-juice.

E-NIC (Electronic Nicotine Inhaler) – another name for the electronic cigarette.

E-Smoke – Another Electronic Cigarette.

(Dunworth, 2016)

DEFINITIONS

F

Flooding – This occurs when too much e-liquid is put into the atomizer. The indicator of flooding is a gurgling sound and the performance of the atomizer is sometimes negatively affected.

Formaldehyde – A known human carcinogen.

G

Genesis Atomizer – An RBA that uses stainless steel mesh as a wick, instead of the typical silica, and sits on the top of a tank (usually glass) with one or more holes in the deck leading into the tank.

Glassomizer – A clearomizer that uses glass rather than plastic for the tank.

Goose Neck – A flexible extension for your PV. Goose necks come in assorted colors and sizes.

Grub Screw – A type of screw used in atomizer posts. The tip is pointed to better secure wires.

H

Heat steeping – The process of speeding up steeping by placing one's e-liquid container in a hot water bath or in a hot environment for any length of time. This is usually used when making liquids at home.

High Resistance (HR) – An atomizer or cartomizer with a higher Ohm rating than the standard equipment. This allows you to apply higher voltage to the coil.

HV MOD – A dual battery or boosted supply MOD (modification) to allow higher power vaping.

I

Inception Coil – A nano coil inside a macro coil made from one continuous piece of wire.

Inhale – The act of breathing the vapor into your lungs. (a.k.a draw)

J

Juice – Another name for e- liquid.

K

Kick/Kicked –

1. another way to describe throat hit
2. a PV add-on installed between the battery and the spring to convert a standard Tube Mod PV into a variable wattage device.

Kanthal Wire – Trademark for a family of iron-chromium-aluminum (FeCrAl) alloys used in high temperature applications.

Kanthal, Kanthal A1 – Kanthal is a specific brand of resistance wire that is used in building coils for electronic cigarettes, usually sold for rebuildables. Kanthal A1 is a specific grade of Kanthal wire which is widely known to be the best wire for coil use.

L

Low Resistance (LR) – An atomizer or cartomizer with a lower ohm rating than the standard equipment. This generally causes the heating element to get hotter faster and produces vapor more quickly.

Lung Hit – Inhales of vapor straight to the lungs. Usually requires massive airflow.

M

Mechanical MOD (Mech MOD, Mech PV, Mech) – An electronic cigarette that doesn't have any electronics or wiring; it's just a metal tube with a mechanical switch that holds a battery and a connector for a topper of some sort.

Micro Coil – A type of wire coil wrap, where the loops of the coil are all touching, requiring more wraps than a traditional coil.

Milligrams (mg) – The unit of measure for how much nicotine is in a cartridge. Typical levels include 0mg, 6mg, 8mg, 12mg, 16mg, 18mg, 24mg, 30mg, 36mg and 50mg.

(Dunworth, 2016)

DEFINITIONS

Milliliters (mL) – The unit of liquid measurement.
MOD – Short for modification. This originally referred to modifying a flashlight or a battery to be used in vaping, but is now commonly used to refer to any vaping device that is not a cigalike.
Mouth to lung hit – Vapor is pulled into the mouth first and then inhaled into the lungs. Can provide more flavor in the mouth.

N

Nic Juice – Nicotine liquid; also short for nicotine, the addictive substance in tobacco.
Nicotine (Nic) – The substance found within traditional and electronic cigarettes. It is available in various strengths. Some e-liquids have the option of no nicotine.
Nicotine Level – The amount of nicotine present in a cartridge or bottle of e-liquid. It is usually measured in mg per ml.

O

Ohm (Ω) – The standard unit of electrical resistance. A lower number indicates lower resistance and therefore faster heating.
Organic Cotton Coils – Features a larger heating section and the addition of Japanese organic cotton, which lasts longer than the majority of cheaper cotton coils.

P

Passthrough – A device that plugs directly into the USB port of a computer or charger and allows the user to vape without having to worry about battery life.
Pen Style – One of many styles of electronic cigarettes available, resembles a ball point pen.
Personal Vaporizer (PV) – Another name for an e-cigarette, usually in reference to the more untraditional style e-cigs.
Propylene Glycol (PG) – One of two main substances used in the making of e-cigarette liquids.
Priming/Prime – The act of preparing a wick to vape, usually done by soaking the wick in e-juice or taking a few pulls without heating the coil. This does not apply to drippers/drip-style atomizers.

R

Some very useful and popular abbreviations in the vaping world:
RBA – Rebuildable Atomizer
RDA – Rebuildable Dripping Atomizer
RDTA – Rebuildable Dripping Tank Atomizer
RTA – Rebuildable Tank Atomizer

S

Squanking– Method of dripping that includes a squeezable bottle inside the MOD. Users squeeze the bottle and e-juice flows through a tube onto the hot atomizer.
Steeping – Allowing your e-liquid to sit either open to the air or in a sealed container. This is generally not necessary in e-liquid that has a high ratio of PG to VG. It is more often necessary in high VG ratio juices.
Stovetop Coil – Coils built to resemble the heating elements on electric stoves. Massive surface area is possible. Some claim they can produce insane amounts of vapor.
Sub-Ohming – The practice by experienced vapers of increasing the electrical current from a battery in order to reduce the ohms of the coils, achieving massive vaping clouds.

T

Tank – A special type of cartridge that holds considerably more liquid than cartridges with filler.

(Dunworth, 2016)

DEFINITIONS

Throat Hit – The feeling an e-cigarette smoker experiences when the vapor hits their throat. Most desire a full, yet smooth hit, not unlike traditional cigarettes
Tiger Coil – A coil wrapped with a strand of regular Kanthal wire twisted with ribbon wire.
Topping Off – Adding a few drops of e-liquid into a cartridge, cartomizer or tank.

V

Vaper – The user of the electronic cigarette.
Vaper's Tongue – A common problem among many vapers when they vape too much of one flavor. Their taste buds become desensitized to the flavor.
Vapor – The atomization of e-liquid that results in a fog juice vapor. This is the main visible factor in vaping that simulates smoke.
Vaporizer – A vaporizer turns a liquid into a gas or a vapor. This is also another term used for electronic cigarette, e-cigarette or PV.
Vaping (vape) – The use of an electronic cigarette. Similar to the term smoking when referring to an cigarette.
Vertical Coil – Instead of leaving coils horizontal, they are rotated 90 degrees. This method often allow for better airflow in rebuildable dripping atomizers.
VG (Vegetable Glycerine) – A common ingredient found in e-liquid. Sweet tasting and of low toxicity, it is thicker than propylene glycol and is usually used where thicker liquid or vapor is desired or where a PG sensitivity is present.
Voltage – The amount of kinetic energy which (for our purposes), when paired with resistance, creates wattage.
VW (Variable Wattage) – Any PV, APV, or MOD that allows the user control over the wattage output across the atomizer coil.

W

Watt (wattage) – The amount of raw heat that the atomizer coil uses to vaporize e-liquid.
Wick – Used to deliver e-liquid to the coil in electronic cigarettes. Most atomizers use a wick that is most commonly made from silica cord. They can also be made from rolled up steel mesh, fiberglass, cotton, and sometimes ceramic materials.
Wicking – The process of osmosis where more concentrated fluid moves to an area of lesser concentration in an effort to find equilibrium.
Wrap – One revolution of a wire during the process of building coils. Wrap refers to the process of "wrapping" a wire around a tool, usually a drill bit or screwdriver.

510 – The most popular and common style of threading for electronic cigarettes. Originally developed by the company JoyE, it quickly became the standard within the industry.

(Dunworth, 2016)

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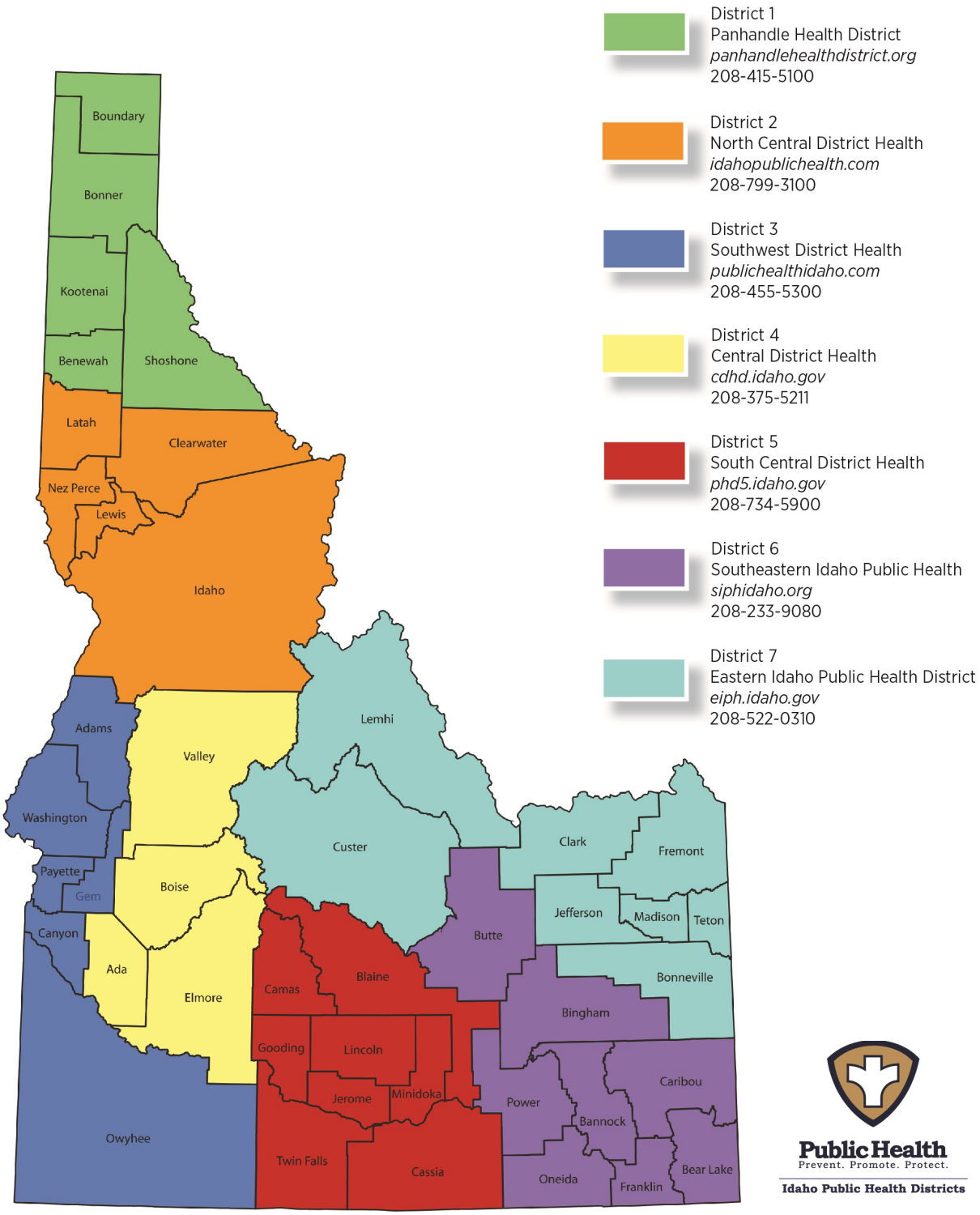
Youth E-cigarette/Vaping Education Mini Grant

If you are struggling with an addiction to nicotine, local Idaho health districts offer free quit assistance for adults, prenatal women, and teens.

Idaho Public Health Districts



(Idaho Public Health Districts, 2019)